

WHAT IS CLAIMED IS:

1. An image forming method on a planographic printing plate precursor including a support having disposed thereon an image recording layer that contains polymerizable compound-encapsulating microcapsules, a polymerization initiator, and a light-to-heat conversing agent, comprising the steps of:

irradiating the planographic printing plate precursor with an infrared beam to form an image in the recording layer of the planographic printing plate precursor; and

prior to irradiating an area with the infrared beam, carrying out pre-heating at a pre-heat region including the irradiation area in the image recording layer to locally bring to a pre-heat temperature,

wherein the pre-heating step has been completed before the infrared beam irradiation is started.

2. The image forming method according to claim 1, wherein the step of pre-heating is completed between one minute prior to the infrared beam irradiation and commencement of irradiation.

3. The image forming method according to claim 1, wherein the step of pre-heating is completed between 30 seconds prior to the infrared beam irradiation and commencement of irradiation.

4. The image forming method according to claim 1, wherein the pre-heat temperature in the pre-heating step is in the range of 50°C to

230°C.

5. The image forming method according to claim 2, wherein the pre-heat temperature in the pre-heating step is in the range of 50°C to 230°C.

6. The image forming method according to claim 3, wherein the pre-heat temperature in the pre-heating step is in the range of 50°C to 230°C.

7. An image exposure apparatus used in the image forming method on a planographic printing plate precursor which includes a support having disposed thereon an image recording layer that contains polymerizable compound-encapsulating microcapsules, a polymerization initiator, and a light-to-heat conversing agent, comprising:

a holding member that holds an attachable planographic printing plate precursor to the apparatus;

an irradiating unit that irradiates the held planographic printing plate precursor with an infrared beam to form an image in the image recording layer of the held planographic printing plate precursor; and

a pre-heating unit that locally heats a pre-heat region including an irradiation area of the planographic printing plate precursor to bring to a pre-heat temperature before performing the infrared beam irradiation.

8. The image forming apparatus according to claim 7, wherein pre-heating is completed between one minute prior to the infrared beam irradiation and commencement of irradiation.

9. The image forming apparatus according to claim 7, wherein pre-heat temperature in the pre-heating step is in the range of from 50°C to 230°C.

10. The image exposure apparatus according to claim 7, wherein the irradiating unit comprises: an exposing head to form an infrared beam spot on the planographic printing plate precursor held by the holding member; a carrier member on which the exposing head is mounted; and a feeding system to allow movement of the exposing head together with the carrier member in a sub-scanning direction at the time of irradiating the planographic printing plate precursor with the beam, and

wherein the pre-heating unit comprises a heat supplying unit that is mounted on the carrier member to be located downstream of the exposing head in the sub-scanning direction so as to supply thermal or electromagnetic energy to the pre-heat region and thereby heating the region to bring to the pre-heat temperature while moving together with the exposing head in the sub-scanning direction at the time of irradiating the planographic printing plate precursor with the beam.

11. An image forming method on a planographic printing plate precursor including a support having disposed thereon an image recording layer that contains cationically polymerizable compound-encapsulating microcapsules, an acid generator, and a light-to-heat conversing agent, comprising the steps of:

carrying out pre-heating of the planographic printing plate precursor to bring to a pre-heat temperature; and

irradiating the pre-heated planographic printing plate precursor with an infrared beam to form an image in the image recording layer of the planographic printing plate precursor.

12. The image forming method according to claim 11, wherein the pre-heat temperature is in the range of 50°C to 230°C.

13. The image forming method according to claim 11, wherein the pre-heat temperature is in the range of 140°C to 200°C.

14. An image exposure apparatus used in the image forming method on a planographic printing plate precursor which includes a support having disposed thereon an image recording layer that contains cationically polymerizable compound-encapsulating microcapsules, an acid generator, and a light-to-heat conversing agent, comprising:

a holding member that holds an attachable planographic printing plate precursor to the apparatus;

a pre-heating unit that heats the held planographic printing

plate precursor to bring to a pre-heat temperature by applying thermal or electromagnetic energy from a linearly extending or two-dimensionally spreading heat supplying unit; and

an irradiating unit that irradiates the held planographic printing plate precursor with an infrared beam to form an image in the image recording layer of the planographic printing plate precursor.

15. The image exposure apparatus according to claim 14, wherein the pre-heat temperature is in the range of 50°C to 230°C.

16. The image exposure apparatus according to claim 14, wherein the pre-heat temperature is in the range of 140°C to 200°C.

17. An image forming method on a planographic printing plate precursor including a support having disposed thereon an image recording layer that contains radical-polymerizable compound-encapsulating microcapsules, a radical generating agent, and a light-to-heat conversing agent, comprising the steps of:

carrying out pre-heating of the planographic printing plate precursor to bring to a pre-heat temperature; and

irradiating the pre-heated planographic printing plate precursor with an infrared beam to form an image in the image recording layer of the planographic printing plate precursor.

18. The image forming method according to claim 17, wherein the

pre-heat temperature is in the range of 50°C to 230°C.

19. The image forming method according to claim 17, wherein the pre-heat temperature is in the range of 140°C to 200°C.

20. An image exposure apparatus used in the image forming method on a planographic printing plate precursor which includes a support having disposed thereon an image recording layer that contains radical-polymerizable compound-encapsulating microcapsules, a radical generating agent, and a light-to-heat conversing agent, comprising:

a holding member that holds an attachable planographic printing plate precursor to the apparatus;

a pre-heating unit that heats the held planographic printing plate precursor to bring to a pre-heat temperature by applying thermal or electromagnetic energy from a linearly extending or two-dimensionally spreading heat supplying unit; and

an irradiating unit that irradiates the held planographic printing plate precursor with an infrared beam to form an image in the image recording layer of the planographic printing plate precursor.